Index to Volume 20

How to Use This Index

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Classification of Subjects

0. General, Unclassified

1. Acoustical Society of America

- 1.1 General, Unclassified
- 1.2 Constitution and By-Laws
- 1.3 History
- 1.4 Honorary Members
- 1.5 Meetings
- 1.6 Members and Membership Lists
- 1.7 Letters to the Editor

2. Architectural Acoustics

- 2.1 General, Unclassified
- 2.2 Auditorium Design (see also 7.6)
- 2.3 Studies of Existing Auditoria
- 2.4 Sound Absorption, Theory and Methods of Measurement of (see also 2.5)
- 2.5 Materials for Sound Absorption. Values of Absorption Coefficients and Acoustical Impedances
- 2.6 Noise Reduction by Increased Room Absorption
- 2.7 Reverberation and Echoes (see also 2.3, 2.4, 2.8, 2.9, and 2.10)
- 2.8 Reverberation Measuring Instruments (see also 2.7 and 5.15)
- 2.9 Sound Transmission, Theory and Methods of Measurement of (see also 2.10)
- 2.10 Sound Insulating Structures. Values of Transmission Coefficients
- 2.11 Vibration Insulating Supports
- 2.12 Damping of Panels

3. Books and Bibliographies

- 3.1 Books and Book Reviews
- 3.2 Bibliographies
- 3.3 Patents

4. The Ear and Hearing

- 4.1 General, Unclassified

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Classification of Subjects

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- 1.6 Members and Membership Lists
- 1.7 Letters to the Editor

2. Architectural Acoustics

- 2.1 General, Unclassified
- 2.2 Auditorium Design (see also 7.6)
- 2.3 Studies of Existing Auditoria
- 2.4 Sound Absorption, Theory and Methods of Measurement of (see also 2.5)
- 2.5 Materials for Sound Absorption. Values of Absorption Coefficients and Acoustical Impedances
- 2.6 Noise Reduction by Increased Room Absorption
- 2.7 Reverberation and Echoes (see also 2.3, 2.4, 2.8, 2.9, and 2.10)
- 2.8 Reverberation Measuring Instruments (see also 2.7 and 5.15)
- 2.9 Sound Transmission, Theory and Methods of Measurement of (see also 2.10)
- 2.10 Sound Insulating Structures. Values of Transmission Coefficients
- 2.11 Vibration Insulating Supports
- 2.12 Damping of Panels

3. Books and Bibliographies

- 3.1 Books and Book Reviews
- 3.2 Bibliographies
- 3.3 Patents

4. The Ear and Hearing

- 4.1 General, Unclassified

4.2 Anatomy and Physiology of the Ear
4.3 Binaural Hearing. Localization
4.4 Deafness (see also 5.5)
4.5 Instruments Relating to Hearing, and for the Testing of Hearing (see also 5.5)
4.6 Loudness. Threshold Determinations
4.7 Masking (see also 5.5)
4.8 Phase Effects (see also 4.3)
4.9 Pitch
4.10 Subjective Tones
4.11 Theories of Hearing
4.12 Timbre
4.13 Ear Acoustical Impedance

5. Applied Acoustics, Instruments and Apparatus

5.1 General, Unclassified
5.2 Amplifiers and Attenuators
5.3 Acoustical and Mechanical Impedance Measurement (see also 11.4)
5.4 Analyzers and Filters, Mechanical and Electrical. Acoustic Filters. Oscillographs (see also 5.15)
5.5 Audiometers (see also 4.4 and 4.5)
5.5.1 Broadcasting
5.6 Chronographs
5.7 Frequency Standards, Frequency Measuring and Recording Instruments
5.8 Loudspeakers, Horns (see also 5.13 and 5.17)
5.9 Microphones. Vibration Microphones. Microphone Calibration Equipment (see also 13.11t)
5.10 Navigational Instruments Using Air Sound. Altitude Measuring Instruments. Sound Ranging (for Underwater Ranging see 13.11n). Geophysical Prospecting
5.11 Oscillators, Electrical and Mechanical
5.12 Phase Meters
5.13 Public Address Systems and Sound Picture Installations
5.14 Rayleigh Disks
5.15 Sound Level Meters. Level Recorders. Sound Pressure Measurement (see also 5.4)
5.16 Sound Recording and Reproducing. General
5.16d Disk Recording (including cutting and embossing)
5.16f Film Recording (by photographic means)
5.16m Magnetic Recording
5.17 Telephone. Telephone Receivers
5.18 Thermophones (see also 5.9)
5.19 Tuning Forks
5.20 Tone and Wave Synthesizers
5.21 Vibration Devices. Devices for Generating or Damping Vibrations (see also 2.11 and 5.9)

See also
2.8 Reverberation Measuring Instruments
4.5 Instruments Relating to Hearing
9.6 Instruments Relating to Speech and Singing
10.3 Ultrasonic Instruments
13.11, 13.11n, and 13.11t. Instruments Relating to Underwater Sound

6. Musical Instruments and Music

6.1 General, Unclassified
6.2 Bells, Xylophones. Other Instruments Having Rigid Vibrators
6.3 Brass Wind Instruments (lip vibrated)
6.4 Drums and Other Membranophonic Instruments
6.5 Pipe Organs
6.6 Pianos and Other Keyboard Stringed Instruments
6.7 Violin Family. Stringed Instruments except Keyboard Type
6.8 Wood Winds
6.9 Electrical Musical Instruments
6.10 Reed Organs. Accordions, Harmonicas

7. Noise

7.1 General, Unclassified
7.2 Annoyance
7.3 Audiograms of Noise
7.4 City Noise
7.5 Frequency Analyses of Noise
7.6 Noise in Buildings (see also 2.2)
7.7 Machinery Noise. Mufflers. Noise Silencers
7.8 Noise Generators

8. Standards

8.1 General, Unclassified

9. Speech and Singing

9.1 General, Unclassified
9.2 Anatomy and Physiology of the Speech Organs
9.3 Articulation Testing. Intelligibility. Defective Speech
9.4 Frequency of Occurrence of Speech Sounds
9.5 Frequency Analyses of Speech Sounds
9.6 Instruments Relating to Speech and Singing
9.7 Speech Pitch
9.8 Speech Power. Singing Voice Power
9.9 Vibrato
9.10 Phonetics

10. Ultrasonics (Supersonics)

10.1 General, Unclassified
10.2 Light Affected by Ultrasonic Waves
10.3 Ultrasonic Instruments
10.4 Gases, Ultrasonic Velocities, Dispersion, and Absorption (see also 11.3)
10.5 Liquids, Ultrasonic Velocities, Dispersion, and Absorption (see also 13.2 and 13.3)
10.6 Solids, Ultrasonic Velocities, Dispersion, and Absorption
10.7 Physical Effects of Ultrasonic Waves
10.8 Chemical Effects of Ultrasonic Waves
10.9 Biological Effects of Ultrasonic Waves

11. Waves and Vibrations (see also 13)

- 11.1 General, Unclassified
- 11.2 Diffraction. Interference. Scattering. Reflection. Echoes. Standing Waves
- 11.2.1 Gross Movement of Matter by Sound or Vibration. Chladni Figures. Kundt's Striae. Sensitive Flames (see also 5.14 and 10.7)
- 11.3 Propagation of Sound. Absorption during Propagation. Velocity of Sound. Refraction. Wave-Length. Doppler Effect (see also 10.4, 10.5, 10.6, 13.2, and 13.3)
- 11.4 Radiation from Vibrating Objects. Acoustical Impedance. Mechanical Impedance (see also 5.3 and 13.7)
- 11.5 Sounds of Finite Amplitude. Distortion
- 11.6 Sound in Tubes
- 11.6.1 Sources of Sound (see also 7.8 and 11.4)
- 11.7 Theory of Waves and Vibrating Systems (see also 5.4)
- 11.8 Biological Effects of Vibration and Sound (see also 10.9)

12. (Changed to Section 0)

13. Underwater Sound

- 13.1 General, Unclassified
- 13.2 Propagation of Sound in Water. Attenuation. Fluctuation
- 13.3 Velocity of Sound in Water. Refraction. Doppler Effect
- 13.4 Reflection. Echoes. Structures for Absorbing Sound in Water
- 13.5 Interference. Diffraction
- 13.6 Scattering. Reverberation in Water
- 13.7 Radiation from Objects Vibrating under Water. Acoustical Impedance. Mechanical Impedance
- 13.8 Sound Generation by Fluid Motion, Bubbles, Turbulence, or Cavitation
- 13.9 Noise in Water. Ship Noise. Biological Noises
- 13.10 Sounds of Finite Amplitude in Water. Explosions. Distortion. Cavitation
- 13.11 Instruments Relating to Underwater Sound. General
- 13.11n Navigational Instruments Using Underwater Sound. Underwater Listening and Echo Ranging Devices. Sonar
- 13.11t Transducers for Underwater Sound. Transducer Calibration

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THE JOURNAL OF THE ACOUSTICAL SOCIETY OF AMERICA VOLUME 20, NUMBER 6 NOVEMBER, 1948

Author Index to Volume 20

Numerals in boldface type refer to volume numbers. (A) designates abstracts; (T) designates title only; (L) designates Letter to the Editor.

Allen, C. H., H. Frings, and I. Rudnick. Some biological effects of intense high frequency airborne sound. **20**: 62—1948

Anderson, Neal S. (see Knudsen, Vern O.). **20**: 849—1948

Arenberg, David L. Ultrasonic solid delay lines. **20**: 1—1948

Arndt, W. F. (see Loye, Donald P.). **20**: 143—1948

Arons, A. B. Secondary pressure pulses due to gas globe oscillation in underwater explosions. II. Selection of adiabatic parameters in the theory of oscillation. **20**: 277—1948

——, **J. P. Slifko, and A. Carter.** Secondary pressure pulses due to gas globe oscillation in underwater explosions. I. Experimental data. **20**: 271—1948

Bachem, A. Chroma fixation at the ends of the musical frequency scale. **20**: 704—1948

Bauer, Louis, Paul Tamarkin, and R. B. Lindsay. Scattering of ultrasonic waves in water by cylindrical obstacles. **20**: 858—1948

Békésy, Georg v. Elasticity of the cochlear partition. **20**: 227—1948

—— Vibration of the head in a sound field and its role in hearing by bone conduction. **20**: 749—1948

—— **and Walter A. Rosenblith.** Early history of hearing—observations and theories. **20**: 727—1948

Beyer, Robert T. (see Smith, Myron C.). **20**:608—1948

Boer, Jan de and Gerrit Schenkel. Electromechanical feedback. **20**: 641—1948

Bolt, R. H. Wanted—the formant—dead or alive. **20**: 66(L)—1948

—— **and A. Giacomini.** Report on the National Electroacoustics Institute "O. M. Corbino" (I.N.E.A.C.), Rome, Italy. **20**: 328—1948

Breuil, Felix du (see Camp, Leon). **20**: 611—1948

Bundy, F. P. Characteristics of stepped-frequency transducer elements. **20**: 297—1948

Burton, Charles J. Study of ultrasonic velocity and absorption in liquid mixtures. **20**: 186—1948

Camp, Leon. Lamination designs for magnetostrictive underwater electroacoustic transducers. **20**: 616—1948

—— Magnetostrictive radial vibrator. **20**: 289—1948

——, **Richard Vincent, and Felix du Breuil.** A 100-kc underwater magnetostrictive transducer. **20**: 611—1948

Carlisle, R. W. (see Pearson, H. W.). **20**: 830—1948

Carlson, F. D. (see Clark, K. C.). **20**: 776—1948

—— (see Rudmose, H. W.). **20**: 503—1948

Carter, A. (see Arons, A. B.). **20**: 271—1948
Christensen, Ralph J. (see Eyring, Carl F.). **20**: 462—1948
Clark, K. C., H. W. Rudmose, J. C. Eisenstein, F. D. Carlson, and R. A. Walker. Effects of high altitude on speech. **20**: 776—1948
—— (see Rudmose, H. W.). **20**: 503—1948
Cook, G. S. (see Corliss, Edith L. R.). **20**: 131—1948
Cook, Richard K. Remarks on measurement of electromotive force of a microphone. **20**: 874(L)—1948
Corliss, Edith L. R. and G. S. Cook. Cavity pressure method for measuring the gain of hearing aids. **20**: 131—1948
Cox, Everett F. Addendum: Subsonic-frequency dispersion in the upper atmosphere. **20**: 549—1948
Cravis, H. (see Pearson, H. A.). **20**: 830—1948

Davis, Hallowell. Biological and psychological effects of ultrasonics. **20**: 605—1948

Egan, James P. Effect of noise in one ear upon the loudness of speech in the other ear. **20**: 58—1948
Eisenstein, J. C. (see Clark, K. C.). **20**: 776—1948
—— (see Rudmose, H. W.). **20**: 503—1948
Everest, F. Alton, Robert W. Young, and Martin W. Johnson. Acoustical characteristics of noise produced by snapping shrimp. **20**: 137—1948
Eyring, Carl F., Ralph J. Christensen, and Russell W. Raitt. Reverberation in the sea. **20**: 462—1948

Fay, R. D. Interactions between a plate and a sound field. **20**: 620—1948
—— **and J. E. White.** Acoustic impedance from motional impedance diagrams. **20**: 98—1948
Feshbach, H. (see Lax, M.). **20**: 108—1948
Finney, W. J. Reflection of sound from submerged plates. **20**: 626—1948
Firestone, F. A. Current publications on acoustics. **20**: 71, 349, 555, 710, 880—1948
Frings, H. (see Allen, C. H.). **20**: 62—1948

Garland, David C. and Charles H. Tindal. Hydrophone suspension system. **20**: 293—1948
Garner, W. R. Loudness of repeated short tones. **20**: 513—1948
—— (see Miller, George A.). **20**: 691—1948
Ghosh, R. N. Elastic impact of pianoforte hammer. **20**: 324—1948
Giacomini, A. (see Bolt, R. H.). **20**: 328—1948
Gigli, Antonio. Sound absorption and transmission measurements. **20**: 839—1948

Harris, Cyril M. Acoustic impedance measurement of very porous screen. **20**: 440—1948
Harrison, Henry. Plane and circular motion of a string. **20**: 874(L)—1948
Hawley, Mones E. (see Slaymaker, Frank H.). **20**: 802—1948
Hibbard, F. H. (see Mason, W. P.). **20**: 476—1948
Hirsh, Ira J. Influence of interaural phase on interaural summation and inhibition. **20**: 536—1948
—— **and Irwin Pollack.** Role of interaural phase in loudness. **20**: 761—1948
Hok, Gunnar. Thickness-shear vibrations of thin anisotropic plates. **20**: 406—1948
Horsley, Caperton B., R. Clark Jones, and Alan A. Smith. Acoustic treatment of liquids in thin laminae. **20**: 182—1948
Hudgins, C. V., R. J. Marquis, R. H. Nichols, Jr., G. E. Peterson, and D. A. Ross. Comparative performance of an experimental hearing aid and two commercial intruments. **20**: 241—1948
Hudson, G. E. and R. D. Specht. Lumping of distributed mass. **20**: 648—1948
Huntington, H. B. Ultrasonic propagation through mercury in tubes. **20**: 424—1948

Ingaard, Uno. Radiation of sound into a circular tube with an application to resonators. **20**: 665—1948

Johnson, Martin W. (see Everest, F. Alton). **20**: 137—1948
Johnston, P. W. Massachusetts hearing test. **20**: 697—1948
Jones, Arthur Taber. Echoes at Echo Bridge. **20**: 706(L)—1948
—— References to contemporary papers on acoustics. **20**: 72, 201, 350, 558, 712, 882—1948
Jones, R. Clark (see Horsley, Caperton B.). **20**: 182—1948
Jordan, Vilhelm L. Erratum: The application of Helmholtz resonators to sound absorbing structures. **20**: 344(L)—1948

Keller, Joseph B. and Herbert B. Keller. Reflection and transmission of sound by a spherical shell. **20**: 310—1948
Keller, Herbert B. (see Keller, Joseph B.). **20**: 310—1948
Kersta, L. G. Amplitude cross-section representation with the sound spectrograph. **20**: 796—1948
Klein, Elias. Some background history of ultrasonics. **20**: 601—1948.
Knudsen, Vern O., John V. Wilson, and Neal S. Anderson. Attenuation of audible sound in fog and smoke. **20**: 849—1948
Kobrak, H. G. Construction material of the sound conduction system of the human ear. **20**: 125—1948
Koenig, W. and A. W. Ruppel. Quantitative amplitude representation in sound spectrograms. **20**: 787—1948
Kranz, Fred W. Hearing aids. **20**: 877(L)—1948

Lax, M. and H. Feshbach. Absorption and scattering for impedance boundary conditions on spheres and circular cylinder. **20**: 108—1948
Leondar, R. W. Simplified porosity measurements. **20**: 39—1948
Lewis, F. S. (see Wiggins, A. M.). **20**: 448—1948
Licklider, J. C. R. Influence of interaural phase relations upon the masking of speech by white noise. **20**: 150—1948
—— **and Irwin Pollack.** Effects of differentiation, integration, and infinite peak clipping upon the intelligibility of speech. **20**: 42—1948
Liebermann, L. N. Origin of sound absorption in water and in sea water. **20**: 868—1948

—— Reflection of sound from coastal sea bottoms. **20**: 305—1948
—— Reflection of underwater sound from the sea surface. **20**: 498—1948
Lindsay, R. B. Compressional wave-front propagation through a simple vortex. **20**: 89—1948
—— (see Bauer, Louis). **20**: 858—1948
Long, T. H. On the performance of cup mouthpiece instruments. **20**: 875(L)—1948
Loye, Donald P. and W. F. Arndt. Sheet of air bubbles as an acoustic screen for underwater noise. **20**: 143—1948

McSkimin, H. J. Theoretical analysis of the mercury delay lines. **20**: 418—1948
Madella, G. B. Substitution method for calibrating a microphone. **20**: 550(L)—1948
Markham, Jordan J. Analysis of acoustic signals by means of the self-consistent spectrum. **20**: 95—1948
Marquis, R. J. (see Hudgins, C. V.). **20**: 241—1948
Mason, W. P. and F. H. Hibbard. Absorbing media for underwater sound measuring tanks and baffles. **20**: 476—1948
Massa, Frank. Sound pressure measurement equipment for the range 50 cycles to 250 kc. **20**: 451—1948
Maxfield, J. P. Time integral basic to optimum reverberation time. **20**: 483—1948
Merrill, Lynn L. and Frank H. Slaymaker. Directional characteristics of a clamped-edge disk. **20**: 375—1948
Miles, John W. Acoustical methods in supersonic aerodynamics. **20**: 314—1948
—— Diffraction of a sound wave by an infinite set of plates. **20**: 370—1948
—— Coupling of a cylindrical tube to a half-infinite space. **20**: 652—1948
Miller, George A. Perception of short bursts of noise. **20**: 160—1948
—— **and W. R. Garner.** Making of tones by repeated bursts of noise. **20**: 691—1948
—— **and Walter G. Taylor.** Perception of repeated bursts of noise. **20**: 171—1948
Molloy, C. T. Calculation of the directivity index for various types of radiators. **20**: 387—1948
Morrow, Charles T. Reaction of small enclosures on the human voice. Part II. Analysis of vowels. **20**: 487—1948
—— Reciprocity calibration of vibration probes. **20**: 826—1948
Morse, R. W. Dispersion of compressional waves in isotropic rods of rectangular cross section. **20**: 833—1948
Mowry, S. C. (see Nolle, A. W.). **20**: 432—1948

Nichols, R. H., Jr. (see Hudgins, C. V.). **20**: 241—1948
Nolle, A. W., and S. C. Mowry. Measurement of ultrasonic bulk-wave propagation in high polymers. **20**: 432—1948

Parshad, R. Supersonics in a water-alcohol mixture and analysis of its intermolecular action. **20**: 66(L)—1948
Pearson, H. A., R. W. Carlisle, and H. Cravis. Vibrators for measurement of response and compliance of phonograph pick-ups. **20**: 830—1948
Peterson, G. E. (see Hudgins, C. V.). **20**: 241—1948
—— (see Potter, Ralph K.). **20**: 528—1948
Pollack, Irwin. Monaural and binaural threshold sensitivity for tones and for white noise. **20**: 52—1948
—— Atonal interval. **20**: 146—1948
—— Effects of high pass and low pass filtering on the intelligibility of speech in noise. **20**: 259—1948
—— (see Hirsh, Ira J.). **20**: 761—1948
—— (see Licklider, J. C. R.). **20**: 42—1948
Potter, Ralph K. and Gordon E. Peterson. Representation of vowels and their movements. **20**: 528—1948

Raitt, Russell W. (see Eyring, Carl F.). **20**: 462—1948
Ramer, L. G. (see Sabine, Paul E.). **20**: 267—1948
Richardson, E. G. Musical acoustics conference at Liege. **20**: 344(L)—1948
Rienstra, A. R. Electronic musical instruments. **20**: 550(L)—1948
Robin, H. L. Electronic musical instruments. **20**: 345(L)—1948
Rosenblith, Walter A. (see Békésy, Georg v.). **20**: 727—1948
Ross, D. A. (see Hudgins, C. V.). **20**: 241—1948
Rudmose, H. W., K. C. Clark, F. D. Carlson, J. C. Eisenstein, and R. A. Walker. Voice measurements with an audio spectrometer. **20**: 503—1948
—— (see Clark, K. C.). **20**: 776—1948
Rudnick, Isadore. Erratum: The propagation of an acoustic wave along a boundary. **20**: 149—1948
—— **and M. N. Stein.** Reciprocity free field calibration of microphones to 100 kc in air. **20**: 818—1948
—— (see Allen, C. H.). **20**: 62—1948
Ruppel, A. W. (see Koenig, A. W.). **20**: 787—1948

Sabine, Paul E. and L. G. Ramer. Absorption-frequency characteristics of plywood panels. **20**: 267—1948
Salmon, Vincent. Suggested reference level nomenclature. **20**: 707(L)—1948
Schenkel, Gerrit (see de Boer, Jan). **20**: 641—1948
Schuck, O. Hugo. Standard lag line for phase measurement. **20**: 26—1948
Slaymaker, Frank H. and Mones E. Hawley. Acoustic impedance matching by means of screens. **20**: 802—1948
—— (see Merrill, Lynn L.). **20**: 375—1948
Slifko, J. P. (see Arons, A. B.). **20**: 271—1948
Smith, Alan A. (see Horsley, Caperton B.). **20**: 182—1948
Smith, Myron C. and Robert T. Beyer. Ultrasonic absorption in water in the temperature range of 0–80°C. **20**: 608—1948
Specht, R. D. (see Hudson, G. E.). **20**: 648—1948
Spence, R. D. Diffraction of sound by circular disks and apertures. **20**: 380—1948
Stein, M. N. (see Rudnick, Isadore). **20**: 818—1948
Strasberg, Murray. Radiation from a diaphragm struck periodically by a light mass. **20**: 683—1948

Tamarkin, Paul (see Bauer, Louis). **20**: 858—1948
Taylor, Walter G. (see Miller, George A.). **20**: 171—1948

Thompson, Sanford P. Reciprocity calibration of primary vibration standards. **20**: 637—1948
Tindal, Charles H. (see Garland, David C.). **20**: 293—1948

Urick, R. J. Absorption of sound in suspensions of irregular particles. **20**: 283—1948

Veneklasen, Paul S. Instrumentation for the measurement of sound pressure level with the Western Electric 640AA condenser microphone. **20**: 807—1948
Vermeulen, R. Melodic scales. **20**: 545—1948
Vincent, Richard (see Camp, Leon). **20**: 611—1948
Walker, R. A. (see Clark, K. C.). **20**: 776—1948
—— (see Rudmose, H. W.). **20**: 503—1948
Watson, Robert B. On the propagation of sound over snow. **20**: 846—1948
White, J. E. (see Fay, R. D.). **20**: 98—1948
Wiener, Francis M. Phase characteristics of condenser microphones. **20**: 707(L)—1948
—— Notes on sound diffraction by rigid circular cones. **20**: 367—1948
Wiggins, A. M. and F. S. Lewis. Single shear plate crystal phonograph pick-up. **20**: 448—1948
Wilson, John V. (see Knudsen, Vern O.). **20**: 849—1948

Young, Robert W. Review of acoustical patents. **20**: 78, 214, 356, 568, 720, 888—1948
—— Performance of cup mouthpiece instruments. **20**: 345(L)—1948
—— Example of propagation of underwater sound by bottom reflection. **20**: 455—1948
—— (see Everest, F. Alton). **20**: 137—1948

THE JOURNAL OF THE ACOUSTICAL SOCIETY OF AMERICA VOLUME 20, NUMBER 6 NOVEMBER, 1948

Analytic Subject Index to Volume 20

Numerals in bold type refer to volume numbers.

0. General, Unclassified

Professor Amedeo Giacomini discusses acoustics in Italy. **20**: 347—1948
Report on the National Electroacoustics Institute "O. M. Corbino" (I.N.E.A.C.), Rome, Italy. R. H. Bolt and A. Giacomini. **20**: 328—1948
Where are courses in sound being taught? **20**: 708—1948

1. Acoustical Society of America

1.1 General, Unclassified

Announcement of forthcoming election. **20**: 708—1948

1.5 Meetings

Dates of future meetings of the Acoustical Society. **20**: 200, 347, 553, 877—1948
Los Angeles meeting well attended. **20**: 200—1948
News of the Washington meeting. **20**: 552—1948
Program of the thirty-fourth meeting of the Acoustical Society of America. **20**: 220—1948
Program of the thirty-fifth meeting of the Acoustical Society of America. **20**: 582—1948

1.6 Members and Membership Lists

Death of Dr. Juichi Obata. **20**: 879—1948
Death of Harold E. Shugart. **20**: 69—1948
Dr. Clarence A. Lovell, co-recipient of the 1948 Potts Medal of the Franklin Institute. **20**: 879—1948
Dr. Harold K. Schilling becomes Head of the Department of Physics at Penn State. **20**: 200—1948
Dr. Isadore Rudnick receives biennial award at Washington meeting. **20**: 877—1948
Dr. Keron C. Morrical goes to Washington University. **20**: 553—1948
Joseph P. Maxfield retires. **20**: 68—1948
L. J. Sivian, 1894–1947. **20**: 69—1948
New associates. **20**: 70, 553—1948
New associates and members. **20**: 348, 708—1948

1.7 Letters to the Editor

Echoes at Echo Bridge. Arthur Taber Jones. **20**: 706—1948
Phase characteristics of condenser microphones. Francis M. Wiener. **20**: 707—1948
Suggested reference level nomenclature. Vincent Salmon. **20**: 707—1948

2. Architectural Acoustics

2.1 General, Unclassified

SUBTITLE

Applied architectural acoustics. Michael Rettinger. **20**: 556—1948

2.2 Auditorium Design (see also 7.6)

PAPER

Time integral basic to optimum reverberation time. J. P. Maxfield. **20**: 483—1948

ABSTRACT

Acoustical performance of rooms. H. Wayne Rudmose. **20**: 225, 594—1948

2.4 Sound Absorption, Theory and Methods of Measurement of (see also 2.5)

PAPERS

Absorption and scattering for impedance boundary conditions on spheres and circular cylinders. M. Lax and H. Feshbach. **20**: 108—1948

Erratum: The application of Helmholtz resonators to sound absorbing structures. Vilhelm L. Jordan. **20**: 344—1948

Erratum: The propagation of an acoustic wave along a boundary. Isadore Rudnick. **20**: 149—1948

Simplified porosity measurements. R. W. Leonard. **20**: 39—1948

Sound absorption and transmission measurements. Antonio Gigli. **20**: 839—1948

ABSTRACT

Measurement of sound absorption of highly absorbent acoustic structures. Peter Chrzanowski. **20**: 594—1948

SUBTITLE

Sound absorption by resonance. **20**: 841—1948

2.5 Materials for Sound Absorption. Values of Absorption Coefficients and Acoustical Impedances

PAPER

Absorption-frequency characteristics of plywood panels. Paul E. Sabine and L. G. Ramer. **20**: 267—1948

PATENTS

Insulating fabric. Games Slayter. **20**: 568—1948

Padding and soundproofing material. Herman Rumpf and Irwin J. Rumpf. **20**: 568—1948

SUBTITLE

Absorption coefficients of some Italian materials. **20**: 840—1948

Coefficient of absorption by systems of resonators. **20**: 843—1948

Sound absorption by persons. **20**: 841—1948

2.7 Reverberation and Echoes (see also 2.3, 2.4, 2.8, 2.9, and 2.10)

PAPER

Time integral basic to optimum reverberation time. J. P. Maxfield. **20**: 483—1948

ABSTRACTS

Acoustical performance of rooms. H. Wayne Rudmose. **20**: 594—1948

Acoustics of arches. Herbert Grove Dorsey. **20**: 597—1948

Some randomizing experiments in reverberant sound fields. S. Edelman and A. London. **20**: 595—1948

Time integral basic to optimum reverberation time. J. P. Maxfield. **20**: 220—1948

2.9 Sound Transmission, Theory and Methods of Measurement of (see also 2.10)

PAPER

Sound absorption and transmission measurements. Antonio Gigli. **20**: 839—1948

ABSTRACTS

Considerations concerning a standard for the measuring of impact sound. Vilhelm Lassen Jordan. **20**: 595—1948

Some observations on the acoustic impedance of small orifices. R. H. Bolt and S. Labate. **20**: 596—1948

Transmission of sound through homogeneous walls. Albert London. **20**: 595—1948

2.10 Sound Insulating Structures. Values of Transmission Coefficients

ABSTRACT

Attenuation of sound by light-weight multiple structures. Leo L. Beranek. **20**: 222—1948

2.11 Vibration Insulating Supports

PAPER

Shock absorber. Leon F. Thiry. **20**: 569—1948

PATENTS

Cushion mounting. G. W. Fyler. **20**: 569—1948

Energy dissipating antivibration device. Leon F. Thiry. **20**: 569—1948

Instrument panel mount. Cecil S. Robinson. **20**: 569—1948

Radio mounting structure. Michael C. Poylo. **20**: 568—1948

Rubber mounting. Gustav H. Kaemmerling. **20**: 78—1948

Shock and vibration insulator. Felix L. Yerzley. **20**: 569—1948

Vibration absorbing mount. Cecil S. Robinson. **20**: 569—1948

Vibration absorption block. Cecil S. Robinson. **20**: 79—1948

Vibration absorption device. Cecil S. Robinson. **20**: 79—1948

Vibration absorption unit. Cecil S. Robinson. **20**: 78—1948

Vibration dampening device. Harold A. Storch. **20**: 79—1948

2.12 Damping of Panels

PATENT

Sound deadener. Oliver Clark Terrell. **20**: 570—1948

3. Books and Bibliographies

3.1 Books and Book Reviews

Applied architectural acoustics. Michael Rettinger. **20**: 556—1948

Elementary mechanical vibrations. Austin H. Church. **20**: 555—1948

Elements of acoustical engineering. Harry F. Olson. **20**: 349—1948

Hearing aids, an experimental study of design objectives. Hallowell Davis, *et al.* **20**: 349—1948

Hearing and deafness: A guide for laymen. Hallowell Davis. **20**: 556—1948

In search of beauty in music. A scientific approach to musical esthetics. Carl E. Seashore. **20**: 71—1948

Nomograms of complex hyperbolic functions. Jorgen Rybner. **20**: 557—1948

Patent notes for engineers. C. D. Tuska, *et al.* **20**: 71—1948 B.R.

Tables of the Bessel Functions $Y_0(x)$, $Y_1(x)$, $K_0(x)$, $K_1(x)$; $0 \leqq X \leqq 1$. **20**: 881—1948

Therapeutic and industrial uses of music, a review of the literature. Doris Soibelman. **20**: 881—1948

Transmission and reception of sounds under combat conditions. G. A. Miller and F. M. Wiener. **20**: 880—1948

3.2 Bibliographies

References to contemporary papers on acoustics. Arthur Tabor Jones. **20**: 72, 201, 350, 558, 712, 882—1948

3.3 Patents

Patent notes for engineers. C. D. Tuska, *et al.* **20**: 71—1948

Review of acoustical patents. Robert W. Young. **20**: 78, 214, 356, 568, 720, 888—1948

4. Ear and Hearing

4.1 General, Unclassified

PAPERS

Early history of hearing—observations and theories. Georg v. Békésy and Walter A. Rosenblith. **20**: 727—1948

Perception of repeated bursts of noise. George A. Miller and Walter G. Taylor. **20**: 171—1948

Perception of short bursts of noise. George A. Miller. **20**: 160—1948

Vibration of the head in a sound field and its role in hearing by bone conduction. Georg v. Békésy. **20**: 749 1948

ABSTRACT

Most comfortable listening levels for pure tones. Norman A. Watson. **20**: 220—1948

SUBTITLES

Hearing and deafness: A guide for laymen. Hallowell Davis. **20**: 556—1948

Hearing by bone conduction in a free sound field. **20**: 758—1948

Relative amplitudes of vibration of the air particles, the eardrum, the stapes, and the basilar membrane. **20**: 755—1948

4.2 Anatomy and Physiology of the Ear

PAPERS

Construction material of the sound conduction system of the human ear. H. G. Kobrak. **20**: 125—1948

On the elasticity of the cochlear partition. Georg v. Békésy. **20**: 227—1948

Construction material of the sound conducting system of the human ear. H. G. Kobrak. **20**: 20—1948

ABSTRACT

Spiral of the human cochlea. Norman R French. **20**: 591—1948

SUBTITLE

Form of displacement of the cochlear partition and its relation to the strength of audible undertones. Georg v. Békésy. **20**: 238—1948

4.3 Binaural Hearing, Localization.

PAPERS

Effect of noise in one ear upon the loudness of speech in the other ear. James P. Egan. **20**: 58—1948

Monaural and binaural threshold sensitivity for tones and for white noise. Irwin Pollack. **20**: 52—1948

Role of interaural phase in loudness. Ira J. Hirsh and Irwin Pollack. **20**: 761—1948

Vibration of the head in a sound field and its role in hearing by bone conduction. Georg v. Békésy. **20**: 749 —1948

SUBTITLE

Monaural and binaural beats. George A. Miller and Walter G. Taylor. **20**: 180—1948

4.5 Instruments Relating to Hearing, and for the Testing of Hearing (see also 5.5)

PAPERS

Cavity pressure method for measuring the gain of hearing aids. Edith L. R. Corliss and G. S. Cook. **20**: 131—1948

Comparison of artificial ear couplers. John L. Glaser and Keron C. Morrical. **20**: 771—1948

PATENTS

Earphone socket structure. Paul S. Veneklasen. **20**: 214 —1948

Hearing aid earpiece. Elizabeth L. Kelsen. **20**: 214—1948

SUBTITLES

Abrege d'audiometrie. J. E. Fournier. **20**: 712—1948 B.R.

Comparative performance of an experimental hearing aid and two commercial instruments. C. V. Hudgins, R. J. Marquis, R. H. Nichols, Jr., G. E. Peterson, and D. A. Ross. **20**: 241—1948

Hearing aids, an experimental study of design objectives. Hallowell Davis, *et al.* **20**: 349—1948

Hearing aids. Fred W. Kranz. **20**: 877—1948 L.E.

Hearing aids and audiometers. W. G. Radley. **20**: 710—1948 B.R.

4.6 Loudness. Threshold Determinations

PAPERS

Atonal interval. Irwin Pollack. **20**: 146—1948

Effect of high altitude on the threshold of hearing. H. W. Rudmose, K. C. Clark, F. D. Carlson, J. C. Eisenstein, and R. A. Walker. **20**: 766—1948

Effect of noise in one ear upon the loudness of speech in the other ear. James P. Egan. **20**: 58—1948

Influence of interaural phase on interaural summation and inhibition. Ira J. Hirsh. **20**: 536—1948

Loudness of repeated short tones. W. R. Garner. **20**: 513 —1948

Massachusetts hearing test. P. W. Johnston. **20**: 697—1948

Monaural and binaural threshold sensitivity for tones and for white noise. Irwin Pollack. **20**: 52—1948

Perception of repeated bursts of noise. George A. Miller and Walter G. Taylor. **20**: 171—1948

Perception of short bursts of noise. George A. Miller. **20**: 160—1948

Role of interaural phase in loudness. Ira J. Hirsh and Irwin Pollack. **20**: 761—1948

ABSTRACTS

Bone conduction threshold measurements. T. V. Frazier and N. A. Watson. **20**: 220—1948

Determination of the loudness of noise from simple measurements. Leo L. Beranek. **20**: 592—1948
Interpretation of loudness, pitch, and masking phenomena with regard to the two-canal theory of cochlea mechanics. L. A. deRosa. **20**: 591—1948
Loudness and monaural loudness matching of short tones. W. R. Garner. **20**: 592—1948
Most comfortable listening levels for pure tones. Norman A. Watson. **20**: 220—1948

SUBTITLE
Auditory persistence. George A. Miller. **20**: 165—1948

4.7 Masking (see also 5.5)

PAPERS
Effects of high pass and low pass filtering on the intelligiblity of speech in noise. Irwin Pollack. **20**: 259—1948
Influence of interaural phase on interaural summation and inhibition. Ira J. Hirsh. **20**: 536—1948
Influence of interaural phase relations upon the masking of speech by white noise. J. C. R. Licklider. **20**: 150—1948
Masking of tones by repeated bursts of noise. George A. Miller and W. R. Garner. **20**: 691—1948
Role of interaural phase in loudness. Ira J. Hirsh and Irwin Pollack. **20**: 761—1948

ABSTRACTS
Auditory masking of pairs of tones by random noise. T. H. Schafer and R. S. Gales. **20**: 221—1948
Interpretation of loudness, pitch, and masking phenomena with regard to the two-canal theory of cochlea mechanics. L. A. deRosa. **20**: 591—1948
Masking by interrupted random noise. George A. Miller. **20**: 593—1948

4.8 Phase Effects (see also 4.3)

PAPERS
Influence of interaural phase on interaural summation and inhibition. Ira J. Hirsh. **20**: 536—1948
Influence of interaural phase relations upon the masking of speech by white noise. J. C. R. Licklider. **20**: 150—1948
Role of interaural phase in loudness. Ira J. Hirsh and Irwin Pollack. **20**: 761—1948

ABSTRACT
Influence of interaural phase on interaural summation and inhibition. Ira J. Hirsh. **20**: 592—1948

4.9 Pitch

PAPERS
Atonal interval. Irwin Pollack. **20**: 146—1948
Chroma fixation at the ends of the musical frequency scale. A. Bachem. **20**: 704—1948

ABSTRACT
Interpretation of loudness, pitch, and masking phenomena with regard to the two-canal theory of cochlea mechanics. L. A. deRosa. **20**: 591—1948

SUBTITLE
Pitch of interrupted noise. George A. Miller and Walter G. Taylor. **20**: 174—1948

4.10 Subjective Tones

SUBTITLE
Form of displacement of the cochlear partition and its relation to the strength of audible undertones. Georg v. Békésy. **20**: 238—1948

4.11 Theories of Hearing

PAPER
Early history of hearing—observations and theories. Georg v. Békésy and Walter A. Rosenblith. **20**: 727—1948

ABSTRACTS
Early theories of hearing. Walter A. Rosenblith and Georg v. Békésy. **20**: 591—1948
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5. Applied Acoustics. Instruments and Apparatus

5.1 General, Unclassified

PAPERS
Acoustic treatment of liquids in thin laminae. Caperton B. Horsley, R. Clark Jones, and Alan A. Smith. **20**: 182—1948
Communication in pipe lines. Edward W. Smith. **20**: 214—1948
Standard lag line for phase measurement. O. Hugo Schuck. **20**: 26—1948
Theoretical analysis of the mercury delay line. H. J. McSkimin. **20**: 418—1948

ABSTRACTS
Acoustic impedance matching by means of screens. Frank H. Slaymaker and Mones E. Hawley. **20**: 594—1948
Acoustical Laboratory facilities at the U. S. Naval Engineering Experiment Station. George Wohlberg. **20**: 588—1948
Audio Noise Reduction System. Harry F. Olson. **20**: 222—1948
High frequency whistles; edge tones and resonance. W. L. Nyborg and H. K. Schilling. **20**: 224—1948
Method for determining complex compressional modulus of sheet structures. Peter J. Westervelt. **20**: 587—1948
Reciprocity calibration of primary vibration standards. Sanford P. Thompson. **20**: 596—1948
Sonic true air speed and Mach number indicator. Victor B. Corey. **20**: 583—1948
Theoretical analysis of the mercury delay line. H. J. McSkimin. **20**: 582—1948
Ultrasonic materials tester. H. E. Van Valkenburg. **20**: 590—1948

PATENTS
Communication in pipe lines. Edward W. Smith. **20**: 214—1948
Control system for radio receivers. Carl Edward Atkins. **20**: 570—1948
Method and means for testing for imperfections in vibratable objects. Frank W. Williams and James Clark. **20**: 357—1948

Reverberation meter. Edmond S. Winlund. **20**: 356—1948
Siren for aircraft. William P. Lear. **20**: 356—1948
Stroboscope. Robert T. Bayne. **20**: 572—1948
Traffic recorder. Alexander C. Wall. **20**: 571—1948
Voice-transmitting gas mask. Armand V. Motsinger. **20**: 357—1948

5.2 Amplifiers and Attenuators

PATENT
Thermionic amplifier. Prafulla Kumar Chatterjea and Charles Thomas Scully. **20**: 571—1948

5.3 Acoustical and Mechanical Impedance Measurement (see also 11.4)

PAPERS
Acoustics impedance from motional impedance diagrams. R. D. Fay and J. E. White. **20**: 98—1948
Acoustic impedance measurement of very porous screen. Cyril M. Harris. **20**: 440—1948
Simplified porosity measurements. R. W. Leonard. **20**: 39—1948

ABSTRACTS
Acoustic feed-back method of measuring acoustic impedance. A London and C. R. Krishnamurthy. **20**: 596—1948
Acoustic impedance measurement of very porous screen. Cyril M. Harris. **20**: 222—1948
Acoustic impedance of sample from motional impedance diagrams. R. D. Fay and J. E. White. **20**: 221—1948
Calculations on a short-tube method for measurement of impedance. Richard K. Cook. **20**: 595—1948
Measurement of acoustic impedance. O. K. El-Mawardi. **20**: 595—1948
Measurement of acoustic impedance by short-tube techniques. Peter Chrzanowski. **20**: 595—1948
Mechanical impedance measurements. John A. Kessler. **20**: 587—1948
Method for measuring acoustic source impedance. J. E. White. **20**: 221—1948
Q-machine for the measurement of mechanical circuit parameters. Howard E. Tompkins. **20**: 587—1948
Some observations on the acoustic impedance of small orifices. R. H. Bolt and S. Labate. **20**: 596—1948

SUBTITLE
Measuring the mechanical impedance of very small vibratory systems. Georg v. Békésy. **20**: 239—1948

5.4 Analyzers and Filters, Mechanical and Electrical. Acoustical Filters. Oscillographs. (see also 5.15)

PAPERS
Amplitude cross-section representation with the sound spectrograph. L. G. Kersta. **20**: 796—1948
Analysis of acoustic signals by means of the self-consistent spectrum. Jordan J. Markham. **20**: 95—1948

ABSTRACT
Acoustic filters for supercharged diesels. Ch. H. Voelker. **20**: 588—1948

PATENTS
Analysis and representation of complex waves. Walter Koenig, Jr. **20**: 888—1948
Analysis and representation of complex waves. Ralph K. Potter. **20**: 720, 721—1948
Frequency selective apparatus. Warren P. Mason. **20**: 720—1948
Translation of visual symbols. Ralph K. Potter. **20**: 888—1948

5.5.1 Broadcasting

SUBTITLE
Transmission and reception of sounds under combat conditions. G. A. Miller and F. M. Wiener. **20**: 880—1948 B.R.

5.7 Frequency Standards, Frequency Measuring and Recording Instruments

PATENTS
Apparatus for measuring voltages. Earle L. Kent. **20**: 889—1948
Frequency meter. Frederick J. Lingel. **20**: 79—1948
Stroboscopic tuning apparatus. John H. Mayberry. **20**: 357—1948

5.8 Loudspeakers, Horns (see also 5.13 and 5.17)

PAPER
Electromechanical feedback. Jan de Boer and Gerrit Schenkel. **20**: 641—1948

ABSTRACTS
Acoustic impedance matching by means of screens. Frank H. Slaymaker and Mones E. Hawley. **20**: 594—1948
Electroacoustic phase shift in loudspeakers. C. A. Ewaskio. **20**: 597—1948
Facilities of the Altec Lansing Corporation for the measurement of loudspeaker performance. P. S. Veneklasen. **20**: 222—1948
Measurement of directivity factor. Cecil J. Burbank. **20**: 223—1948
Measurements for aiding in the evaluation of the quality of loudspeakers. H. H. Hall and H. C. Hardy. **20**: 596—1948
Monitor speaker. Walter W Carruthers. **20**: 223—1948
Simple approach to generalized horn theory. O. K. El-Mawardi. **20**: 597—1948
Transient response of loudspeakers. H. C. Hardy and H. H. Hall. **20**: 596—1948

PATENT
Cabinet for sound-reproducing devices. Paul M. Gazlay. **20**: 721—1948

SUBTITLE
Directivity index for multicelluiar horn. **20**: 402—1948

5.9 Microphones. Vibration Microphones. Microphone Calibration Equipment (see also 13.11t)

PAPERS
Acoustic impedance matching by means of screens. Frank H. Slaymaker and Mones E. Hawley. **20**: 802—1948

Electromechanical feedback. Jan de Boer and Gerrit Schenkel. **20**: 641—1948
Reciprocity calibration of primary vibration standards. Sanford P. Thompson. **20**: 637—1948
Reciprocity calibration of vibration probes. Charles T. Morrow. **20**: 826—1948
Reciprocity free field calibration of microphones to 100 kc in air. I. Rudnick and M. N. Stein. **20**: 818—1948
Sound pressure measurement equipment for the range 50 cycles to 250 kc. Frank Massa. **20**: 451—1948
Vibrators for measurement of response and compliance of phonograph pick-ups. H. A. Pearson, R. W. Carlisle, and H. Cravis. **20**: 830—1948

ABSTRACTS

Acoustic impedance matching by means of screens. Frank H. Slaymaker and Mones E. Hawley. **20**: 594—1948
Free field calibration of transducers to 100 kc in air. I. Rudnick and M. N. Stein. **20**: 224—1948
Measurement of directivity factor. Cecil J. Burbank. **20**: 223—1948
New instrument for subsonic frequency measurements. J. V. Atanasoff, B. L. Snavely, and John Brown. **20**: 222—1948
Reciprocity calibration of primary vibration standards. Sanford P. Thompson. **20**: 596—1948
Reciprocity calibration of vibration probes. Charles T. Morrow. **20**: 598—1948
Small high frequency microphone. I. Rudnick and H. C. Rothenberg. **20**: 594—1948
Sound pressure measurement equipment for the range 50 cycles to 250 kc. Frank Massa. **20**: 591—1948

PATENTS

Acoustic coupler for condenser microphones. Harold C. Silent. **20**: 79—1948
Electrical apparatus. William H. Bussey. **20**: 80—1948
Electroacoustic transducer having damping slots. Francis M. Wiener. **20**: 359—1948
Electromechanical signal translating device. Joseph P. Maxfield. **20**: 570—1948
Face harness for microphones. Herman C. Hornickel. **20**: 570—1948
Granulated carbon microphone. Jan de Boer. **20**: 571—1948
Microphone. Otto Soldan. **20**: 357—1948
Microphone. Roelof Vermeulen. **20**: 721—1948
Microphone. Alfred L. W. Williams and Alfred P. Dank. **20**: 80—1948
Microphone handle. Harold C. Pye. **20**: 358—1948
Noise shield for transmitter mouthpieces. Edwin B. Newman and Joseph Miller. **20**: 80—1948
Piezoelectric device. John E. Shomer. **20**: 358—1948
Piezoelectric device. Raymond W. Tibbetts. **20**: 722—1948

SUBTITLES

Phase characteristics of condenser microphones. Francis M. Wiener. **20**: 707—1948 L.E.
Remarks on measurement of electromotive force of a microphone. Richard K. Cook. **20**: 874—1948 L.E.
Substitution method for calibrating a microphone. G. B. Madella. **20**. 550—1948 L.E.

5.10 Navigational Instruments Using Air Sound. Altitude Measuring Instruments. Sound Ranging (for Underwater Ranging see 13.11n). Geophysical Prospecting

PATENTS

Apparatus for locating sound sources. Frank Massa. **20**: 359—1948
Compressional wave directional, prismatic and focusing system. Warren P. Mason. **20**: 359—1948
Echo sounding device. Peter Orlich, Günther Negel, and Hans Hartz. **20**: 214—1948
Geophone polarity indicator. Louis W. Gardner. **20**: 722—1948
Seismometer. Herbert Hoover, Jr. **20**: 572—1948
Sonic direction finding. Alfred A. Stuart, Jr. **20**: 572—1948
Sound direction finder. Gabriel M. Giannini. **20**: 722—1948

5.12 Phase Meters

PAPER

Standard lag line for phase measurement. O. Hugo Schuck. **20**: 26—1948

ABSTRACT

"Phangle" meter. Edith L. R. Corliss. **20**: 584—1948

5.13 Public Address Systems and Sound Picture Installations

PATENTS

Acoustic system for uniform distribution of sound. William W. Hayes. **20**: 572—1948
Sound amplifying apparatus. Arthur J. Sanial. **20**: 359—1948
Theater amplifying and sound distribution system. Frank Rieber. **20**: 573—1948
Voice operated switch for a duplex system. Otto Tschumi. **20**: 722—1948

5.15 Sound Level Meters. Level Recorders. Sound Pressure Measurement (see also 5.4)

PAPERS

Instrumentation for the measurement of sound pressure level with the Western Electric 640AA condenser microphone. Paul S. Veneklasen. **20**: 807—1948
Sound pressure measurement equipment for the range 50 cycles to 250 kc. Frank Massa. **20**: 451—1948

ABSTRACTS

Amplitude cross-section representation with the sound spectrograph. L. G. Kersta. **20**: 584—1948
Quantitative amplitude representation in sound spectrograms. W. Koenig and A. E. Ruppel. **20**: 584—1948
Sound pressure measurement equipment for the range 50 cycles to 250 kc. Frank Massa. **20**: 591—1948

PATENTS

Sound recording projectile. Lloyd A. Elmer and Clarence A. Lovell. **20**: 215—1948

SUBTITLE
Suggested reference level nomenclature. Vincent Salmon. **20**: 707—1948 L.E.

5.16 Sound Recording and Reproducing. General

ABSTRACT
Audio noise reduction system. Harry F. Olson. **20**: 222—1948

PATENT
Reverberation method and system. Barton Kreuzer. **20**: 573—1948

5.16d Disk Recording (including cutting and embossing)

PAPERS
Sincle shear plate crystal phonograph pick-up. A. M. Wiggins and F. S. Lewis. **20**: 448—1948
Vibrators for measurement of response and compliance of phonograph pick-ups. H. A. Pearson, R. W. Carlisle, and H. Cravis. **20**: 830—1948

ABSTRACTS
Calibration of phonograph reproducers. Weiant Wathen-Dunn. **20**: 584—1948
Vibrators for measurement of response and compliance of phonograph pick-ups. H. A. Pearson, R. W. Carlisle, and H. Cravis. **20**: 584—1948

5.16f Film recording (by photographic means)

PATENT
Frequency modulation feed-back circuit for sound recording galvanometers. Alexis Badmaieff. **20**: 215—1948

5.16m Magnetic Recording

ABSTRACTS
Discussion of some of the factors which determine the effective noise level in magnetic recording. J. Warren Gratian. **20**: 584—1948
Distortion in magnetic recording. Walter H. Erikson. **20**: 584—1948

PATENTS
Magnetic recording head. Marvin Camras. **20**: 216, 216, 573—1948
Magnetic wire storage unit. Danforth K. Gannett. **20**: 215—1948
Recording and reproducing head for wire recorders. Marvin Camras. **20**: 574—1948
Removable pole pieces for magnetic recording and reproducing heads. Cary B. Jones. **20**: 574—1948
Wire-type recording and reproducing apparatus. Edward L. Barrett. **20**: 216—1948

5.17 Telephone. Telephone Receivers

PATENTS
Earphone socket. Stanley Smith Stevens. **20**: 80—1948
Earphone socket. Paul S. Veneklasen. **20**: 360—1948
Electromagnetic telephone receiver. Joachim Wolff. **20**: 574—1948
Noise eliminator for telephone transmitters. Harry J. Hart. **20**: 723—1948
Telephone instrument. Ernest S. McLarn. **20**: 360—1948
Variable sensitivity sound-powered receiver. Nicholas T. Volsk. **20**: 360—1948

SUBTITLE
Effects of artificial leaks at altitude and sea level. **20**: 768—1948

5.21 Vibration Devices. Devices for Generating or Damping Vibrations (see also 2.11 and 5.9)

PATENTS
Sonic method for testing metal. Thomas A. Read, Herbert I. Fusfeld, and Sumner W. Kitchen. **20**: 81—1948
Vibration damper. Philip Newcomb. **20**: 81—1948

6. Musical Instruments and Music

6.1 General, Unclassified

PAPERS
Melodic scales. R. Vermeulen. **20**: 545—1948
Mexican musician makes musical tests at New York University. **20**: 553—1948

ABSTRACTS
Mathematics of musical scales. M. H. Gwynn. **20**: 588—1948
Problem of novelty in musical instrument design. E. L. Kent. **20**: 588—1948

SUBTITLES
In search of beauty in music. A scientific approach to musical esthetics. Carl E. Seashore. **20**: 71—1948 B.R.
Musical Acoustics Conference at Liege. E. G. Richardson. **20**: 344—1948 L.E.
Therapeutic and industrial uses of music, a review of the literature. Doris Soibelman. **20**: 881—1948 B.R.
Wanted—The formant—Dead or alive. R. H. Bolt. **20**: 66—1948 L.E.

6.2 Bells, Xylophones. Other Instruments Having Rigid Vibrators

PATENTS
Sound producing instrument. Milo F. Miller. **20**: 360—1948
Sounding device. John A. Jowett. **20**: 360—1948

SUBTITLE
Campanology, Europe 1945–47. Percival Price. **20**: 710—1948 B.R.

6.3 Brass Wind Instruments (lip vibrated)

ABSTRACT
Trumpet intonation differences due to bell taper. John C. Webster. **20**: 588—1948

PATENT
Valve action for cornets, trumpets, and like instruments. Oscar E. Swinehart. **20**: 81—1948

SUBTITLES
On the performance of cup mouthpiece instruments. T. H. Long. **20**: 875—1948 L.E.
On the performance of cup mouthpiece instruments. Robert W. Young. **20**: 345—1948 L.E.

6.4 Drums and Other Membranophonic Instruments

PATENTS

Percussion drum. Charles P. Cordes. **20**: 723, 723—1948

6.5 Pipe Organs

ABSTRACT

High frequency whistles; edge tones and resonance. W. L. Nyborg and H. K. Schilling. **20**: 224—1948

PATENT

Musical instrument. Harold M. Waage. **20**. 574—1948

6.6 Pianos and Other Keyboard Stringed Instruments

PAPER

Elastic impact of pianoforte hammer. R. N. Ghosh. **20**: 324—1948

PATENTS

Escapement action for grand pianos. Reinhard Schulze. **20**: 82—1948

Keyboard for musical instruments. Floyd A. Firestone. **20**: 361—1948

Musical instrument. Sidney C. Shill. **20**: 724—1948

Piano action. William G. Betz. **20**: 81—1948

Piano action. Alexander P. Brown. **20**: 724, 724—1948

Piano action. Francis C. Socin. **20**: 361, 723—1948

Piano action. Ralph W. E. Sperry. **20**: 723—1948

Piano amplifier. John H. Scott. **20**: 360—1948

Resonator for musical instruments. Archie M. Tyson. **20**: 361—1948

Vibrato producing means for musical instruments. Erving F. Gerlat. **20**: 82—1948

6.7 Violin Family. Stringed Instruments except Keyboard Type

ABSTRACT

Large amplitude motions of a string. H. Harrison. **20**: 598—1948

PATENTS

Mute for stringed musical instruments. Russell B. Kingman. **20**: 82—1948

Peg for stringed instruments. Traugott Rohner. **20**: 575—1948

Steel for Hawaiian guitars. Frank J. Smith. **20**: 575—1948

Stringed musical instrument. John W. McBride. **20**: 82—1948

Stringed musical instrument. Myron Earl Osburn. **20**: 362—1948

Variable tension violin bow. William Karl Krause. **20**: 575—1948

6.8 Wood Winds

PATENT

F-bar key for saxophones. Louis E. Berkson. **20**: 575—1948

6.9 Electrical Musical Instruments

PATENTS

Apparatus for producing electrical oscillations. Alvin W. Wells. **20**: 362—1948

Apparatus for the production of music. Benjamin F. Miessner. **20**: 216, 217—1948

SUBTITLES

Electronic musical instruments. A. R. Rienstra. **20**: 550—1948 L.E.

Electronic musical instruments. H. L. Robin. **20**: 345—1948 L.E.

6.10 Reed Organs, Accordions, Harmonicas.

PATENTS

Accordion treble shift mechanism. Erwin C. Osenberg. **20**: 83—1948

Harmonica. Fred Sonnen. **20**: 576—1948

Musical instrument. Patrick McAuliffe. **20**: 576—1948

Plastic harmonica. Finn. H. Magnus. **20**: 82—1948

7. Noise

7.1 General, Unclassified

SUBTITLE

The Physical Society of London, Acoustics Group, to hold international symposium on noise, London 1948. **20**: 347—1948

7.7 Machinery Noise. Mufflers. Noise Silencers

ABSTRACTS

Acoustic filters for supercharged diesels. Ch. H. Voelker. **20**: 588—1948

Audible noise from a P-80 jet airplane. Weiant Wathen-Dunn. **20**: 587—1948

PATENTS

Muffler. Joseph P. Marx. **20**: 217—1948

Resonator silencer. E. E. Wilson. **20**: 217—1948

8. Standards

8.1 General, Unclassified

SUBTITLE

Suggested reference level nomenclature. Vincent Salmon. **20**: 707—1948 L.E.

9. Speech and Singing

9.1 General, Unclassified

PAPERS

Effects of high altitude on speech. K. C. Clark, H. W. Rudmose, J. C. Eisenstein, F. D. Carlson, and R. A. Walker. **20**: 766—1948

Quantitative amplitude representation in sound spectrograms. W. Koenig and A. E. Ruppel. **20**: 787—1948

Reaction of small enclosures on the human voice. Part II. Analyses of vowels. Charles T. Morrow. **20**: 487—1948

Representation of vowels and their movements. Ralph K. Potter and Gordon E. Peterson. **20**: 528—1948

ABSTRACTS

Radio's redefinitions of voice sounds. Claire Benedict. **20**: 588—1948

Representation of vowels and their movements. Ralph K. Potter and Gordon E. Peterson. **20**: 593—1948

SUBTITLE
Transmission and reception of sounds under combat conditions. G. A. Miller and F. M. Wiener. **20**: 880—1948 B.R.

9.3 Articulation Testing. Intelligibility. Defective Speech.

PAPERS
Effects of differentiation, integration, and infinite peak slipping upon the intelligibility of speech. J. C. R. Licklider and Irwin Pollack. **20**: 42—1948
Effects of high pass and low pass filtering on the intelligibility of speech in noise. Irwin Pollack. **20**: 259—1948
Reaction of small enclosures on the human voice. Part II. Analyses of vowels. Charles T. Morrow. **20**: 487—1948

ABSTRACTS
Importance of different frequency regions for speech intelligibility. Rogers H. Galt. **20**: 592—1948
Intelligibility of interrupted speech. J. C. R. Licklider and G. A. Miller. **20**: 593—1948

SUBTITLE
Transmission and reception of sounds under combat conditions. G. A. Miller and F. M. Wiener. **20**: 880—1948 B.R.

9.5 Frequency Analyses of Speech Sounds

PAPERS
Quantitative amplitude representation in sound spectrograms. W. Koenig and A. R. Ruppel. **20**: 787—1948
Reaction of small enclosures on the human voice. Part II. Analyses of vowels. Charles T. Morrow. **20**: 487—1948
Representation of vowels and their movements. Ralph K. Potter and Gordon E. Peterson. **20**: 528—1948
Voice measurements with an audio spectrometer. H. W. Rudmose, K. C. Clark, F. D. Carlson, J. C. Eisenstein, and R. A. Walker. **20**: 503—1948

ABSTRACT
Representation of vowels and their movements. Ralph K. Potter and Gordon E. Peterson. **20**: 593—1948

9.6 Instruments Relating to Speech and Singing

PAPERS
Amplitude cross-section representation with the sound spectrograph. L. G. Kersta. **20**: 796—1948
Quantitative amplitude representation in sound spectrograms. W. Koenig and A. E. Ruppel. **20**: 787—1948

ABSTRACTS
Amplitude cross-section representation with the sound spectrograph. L. G. Kersta. **20**: 584—1948
Quantitative amplitude representation in sound spectrograms. W. Koenig and A. E. Ruppel. **20**: 584—1948

9.7 Speech Pitch

PAPER
Representation of vowels and their movements. Ralph K. Potter and Gordon E. Peterson. **20**: 528—1948

9.8 Speech Power. Singing Voice Power

PAPERS
Quantitative amplitude representation in sound spectrograms. W. Koenig and A. E. Ruppel. **20**: 787—1948
Representation of vowels and their movements. Ralph K. Potter and Gordon E. Peterson. **20**: 528—1948

ABSTRACT
Loudness of speaking: The effect of heard stimuli on spoken responses. John W. Black. **20**: 598—1948

10. Ultrasonic (Supersonic)

10.1 General, Unclassified

PAPERS
Interactions between a plate and a sound field. R. D. Fay. **20**: 620—1948
Reflection of sound from submerged plates. W. J. Finney. **20**: 626—1948
Some background history of ultrasonics. Elias Klein. **20**: 601—1948
Thickness-shear vibrations of thin anisotropic plates. Gunnar Hok. **20**: 406—1948

ABSTRACTS
Some background history of ultrasonics. Elias Klein. **20**: 599—1948
Ultrasonic measurement of physical properties; techniques and their fields of application. John C. Hubbard. **20**: 599—1948

SUBTITLE
Thickness-shear vibrations of thin AT and BT cut quartz plates. **20**: 415—1948

10.2 Light Affected by Ultrasonic Waves

PATENT
Electromechanical apparatus. David L. Arenberg. **20**: 576—1948

SUBTITLE
Ultrasonic cells and light modulation. R. H. Bolt and A. Giacomini. **20**: 330—1948

10.3 Ultrasonic Instruments

PAPERS
A 100-kc underwater magnetostrictive transducer. Leon Camp, Richard Vincent, and Felix du Breuil. **20**: 611—1948
Lamination designs for magnetostrictive underwater electroacoustic transducers. Leon Camp. **20**: 616—1948
Reciprocity free field calibration of microphones to 100 kc in air. I. Rudnick and M. N. Stein. **20**: 818—1948
Some background history of ultrasonics. Elias Klein. **20**: 601—1948
Ultrasonic solid delay lines. David L. Arenberg. **20**: 1—1948

ABSTRACTS
Crystal pick-up for the detection of ultrasonic standing waves in rods. A. E. Bakanowski and R. B. Lindsay. **20**: 590—1948

Radiation characteristics of ultrasonic focusing radiators G. W. Willard. **20**: 589—1948
Sound pressure measurement equipment for the range 50 cycles to 250 kc. Frank Massa. **20**: 451, 591—1948
Ultrasonic materials tester. H. E. Van Valkenburg. **20**: 590—1948
Ultrasonic radiation from curved quartz crystals. Louis Fein. **20**: 583—1948

SUBTITLES
Crystal studies. R. H. Bolt and A. Giacomini. **20**: 331—1948
Operating constants for liquid and quartz delay lines. David L. Arenberg. **20**: 3—1948
Transducer band width ratio at half-power points as a function of Z_0/Z_1. David L. Arenberg. **20**: 2—1948

10.4 Gases, Ultrasonic Velocities, Dispersion, and Absorption (see also 11.3)

ABSTRACTS
Preliminary report on absorption in air from 10 to 100 kc, measured by pulse techniques. H. C. Rothenberg and W. H. Pielemeier. **20**: 585—1948
Rotational absorption and dispersion of ultrasonics in hydrogen. James L. Stewart and Ellen S. Stewart. **20**: 585—1948

10.5 Liquids, Ultrasonic Velocities, Dispersion, and Absorption (see also 13.2 and 13.3)

PAPERS
Study of ultrasonic velocity and absorption in liquid mixtures. Charles J. Burton. **20**: 186—1948
Ultrasonic absorption in water in the temperature range 0°–80°C. Myron C. Smith and Robert T. Beyer. **20**: 608—1948

ABSTRACTS
Attenuation of longitudinal waves in high polymers. J. C. Smith and J. W. Ballou. **20**: 586—1948
Effects of high intensity ultrasonic radiation. J. F. Muller and G. W. Willard. **20**: 589—1948
Measurement of ultrasonic bulk-wave propagation in high polymers. A. W. Nolle. **20**: 587—1948
Onset of acoustical cavitation in fluids. F. G. Blake, Jr. **20**: 590—1948
Ultrasonic attention in solutions of high polymers. Jean Hoopes and Joseph Zallen. **20**: 586—1948
Ultrasonic investigation of molecular properties of liquids. Cyclic compounds. Alfred Weissler. **20**: 585—1948
Ultrasonic investigations of substances under high pressures. Gerald J. Holton. **20**: 586—1948

SUBTITLE
Velocity measurements in liquids. R. H. Bolt and A. Giacomini. **20**: 331—1948

10.6 Solids, Ultrasonic Velocities, Dispersion, and Absorption

PAPERS
Dispersion of compressional waves in isotropic rods of rectangular cross section. R. W. Morse. **20**: 833—1948
Measurement of ultrasonic bulk-wave propagation in high polymers. A. W. Nolle and S. C. Mowry. **20**: 432—1948
Ultrasonic solid delay lines. David L. Arenberg. **20**: 1—1948

ABSTRACTS
Acoustic absorption in sand and soil. W. L. Nyborg and I. Rudnick. **20**: 597—1948
Attenuation of ultrasonic sound waves in water. R. W. Leonard. **20**: 224—1948
Dispersion of compressional waves in isotropic rods of rectangular cross section. R. W. Morse. **20**: 585—1948
Energy losses of sound waves in metals due to scattering and diffusion. W. P. Mason and H. J. McSkimin. **20**: 586—1948
Pulse method for measuring small changes in ultrasonic velocity in solids with temperature. Richard D. Holbrook. **20**: 590—1948
Theory of low frequency sound absorption in soda-silica glasses. Granio A. Korn. **20**: 585—1948
Ultrasonic measurement of the elastic properties of polycrystalline materials at high and low temperatures. Julian R. Frederick. **20**: 586—1948

SUBTITLES
Photoelastic solid delay line. David L. Arenberg. **20**: 13—1948.
Reflection of waves in a solid at a boundary. David L. Arenberg. **20**: 9—1948
Relative velocities of vibrational modes of solids as a function of Poisson's ratio. David L. Arenberg. **20**: 6—1948
Variation of attenuation with frequency in plate glass. David L. Arenberg. **20**: 11—1948
Velocity and attenuation of longitudinal waves in certain solids. David L. Arenberg. **20**: 10—1948

10.7 Physical Effects of Ultrasonic Waves

PAPER
Acoustic treatment of liquids in thin laminae. Caperton B. Horsley, R. Clark Jones, and Alan A. Smith. **20**: 182—1948

ABSTRACTS
Apparatus for cavitation studies. F. G. Blake, Jr. **20**: 223—1948
Ultrasonic measurement of physical properties; techniques and their fields of application. John C. Hubbard. **20**: 599—1948

PATENT
Supersonic treatment of fluid masses. Edward Oldroyd. **20**: 217—1948

10.8 Chemical Effects of Ultrasonic Waves

ABSTRACT
Chemical effects of ultrasonic irradiation: Reaction between carbon tetrachloride and water. Alfred Weissler, Herbert W. Cooper, and Stuart Snyder. **20**: 589—1948

SUBTITLE
Supersonics in a water-alcohol mixture and analysis of its intermolecular action. R. Parshad. **20**: 66—1948 L.E.

10.9 Biological Effects of Ultrasonic Waves

PAPERS
Biological and psychological effects of ultrasonics. Hallowell Davis. **20**: 605—1948
Some biological effects of intense high frequency airborne sound. C. H. Allen, H. Frings, and I. Rudnick. **20**: 62—1948

ABSTRACTS
Biological and psychological effects of ultrasonics. Hallowell Davis. **20**: 589—1948
Some biological effects of intense high frequency airborne sound. C. H. Allen and I. Rudnick. **20**: 221—1948

11. Waves and Vibrations

11.1 General, Unclassified

PAPER
Acoustical methods in supersonic aerodynamics. John W. Miles. **20**: 314—1948

11.2 Diffraction, Interference. Scattering. Reflection. Echoes. Standing Waves

PAPERS
Diffraction of a sound wave by an infinite set of plates. John W. Miles. **20**: 370—1948
Diffraction of sound by circular disks and apertures. R. D. Spence. **20**: 380—1948
Notes on sound diffraction by rigid circular cones. Francis M. Wiener. **20**: 367—1948

ABSTRACT
Acoustics of arches. Herbert Grove Dorsey. **20**: 597—1948

SUBTITLE
Echoes at Echo Bridge. Arthur Taber Jones. **20**: 706—1948 L.E.

11.3 Propagation of Sound. Absorption during Propagation. Velocity of Sound. Refraction. Wave-Length. Doppler Effect (see also 10.4, 10.5, 10.6, 13.2, and 13.3)

PAPERS
Absorption and scattering for impedance boundary conditions on spheres and circular cylinders. M. Lax and H. Feshbach. **20**: 108—1948
Attentuation of audible sound in fog and smoke. Vern O. Knudsen, John V. Wilson, and Neal S. Anderson. **20**: 849—1948
Compressional wave front propagation through a simple vortex. R. B. Lindsay. **20**: 89—1948
Erratum: The propagation of an acoustic wave along a boundary. Isadore Rudnick. **20**: 149—1948
On the propagation of sound over snow. Robert B. Watson. **20**: 846—1948
Reflection and transmission of sound by a spherical shell. Joseph B. Keller and Herbert B. Keller. **20**: 310—1948

ABSTRACTS
Absorption of sound in air at reduced pressures. L. P. Delasso, R. W. Leonard, and Robert Halley. **20**: 598—1948
Acoustic absorption in sand and soil. W. L. Nyborg and I. Rudnick. **20**: 597—1948
Acoustic properties of snow. R. B. Watson. **20**: 597—1948
Propagation of sound in gases as a transport phenomenon. Harold M. Mott-Smith. **20**: 599—1948
Some observations on the acoustic impedance of small orifices. R. H. Bolt and S. Labate. **20**: 596—1948
Subsonic-frequency dispersion in the upper atmosphere. Everett F. Cox. **20**: 549—1948
Theoretical and observed absorption of sound in suspensions. R. J. Urick. **20**: 225—1948
Ultrasonic investigations of substances under high pressures. Gerald J. Holton. **20**: 586—1948

SUBTITLES
Directivity index of circular piston. **20**: 392—1948
Echoes at Echo Bridge. Arthur Taber Jones. **20**: 706—1948 L.E.

11.4 Radiation from Vibrating Objects. Acoustical Impedance. Mechanical Impedance (see also 5.3 and 13.7)

PAPERS
Acoustic impedance matching by means of screens. Frank H. Slaymaker and Mones E. Hawley. **20**: 802—1948
Calculation of the directivity index for various types of radiators. C. T. Molloy. **20**: 387—1948
Coupling of a cylindrical tube to a half-infinite space. John W. Miles. **20**: 652—1948
Directional characteristics of a clamped-edge disk. Lynn L. Merrill and Frank H. Slaymaker. **20**: 375—1948
On the radiation of sound into a circular tube, with an application to resonators. Uno Ingård. **20**: 665—1948

ABSTRACTS
Acoustic impedance matching by means of screens. Frank H. Slaymaker and Mones E. Hawley. **20**: 594—1948
Directional characteristics of a clamped-edge disk. Lynn L. Merrill and Frank H. Slaymaker. **20**: 222—1948
Radiation characteristics of ultrasonic focusing radiators. G. W. Willard. **20**: 589—1948

SUBTITLES
Radiation from an infinite slot. John W. Miles. **20**: 662—1948
Radiation from an unflanged tube. John W. Miles **20**: 664—1948

11.5 Sounds of Finite Amplitude. Distortion

PAPER
Acoustical methods in supersonic aerodynamics. John W. Miles. **20**: 314—1948

11.6 Sound in Tubes

PAPERS

Coupling of a cylindrical tube to a half-infinite space. John W. Miles. **20**: 652—1948

On the radiation of sound into a circular tube, with an application to resonators. Uno Ingård. **20**: 665—1948

On ultrasonic propagation through mercury in tubes. H. B. Huntington. **20**: 424—1948

Theoretical analysis of the mercury delay line. H. J. McSkimin. **20**: 418—1948

ABSTRACTS

New results on the propagation of low frequency waves in pipes. J. V. Atanasoff, D. L. Bobroff and E. R. Kolsrud. **20**: 598—1948

Theoretical analysis of the mercury delay line. H. J. McSkimin. **20**: 582—1948

SUBTITLES

Solution to wave equation for circular pipes. **20**: 423—1948

Sonic propagation in a circular tube. **20**: 429—1948

11.6.1 Sources of Sound (see also 7.8 and 11.4)

ABSTRACT

High frequency whistler; edge tones and resonance. W. L. Nyborg and H. K. Schilling: **20**: 224—1948

11.7 Theory of Waves and Vibrating Systems (see also 5.4)

PAPERS

Acoustic impedance matching by means of screens. Frank H. Slaymaker and Mones E. Hawley. **20**: 802—1948

Analysis of acoustic signals by means of the self-consistent spectrum. Jordan J. Markham. **20**: 95—1948

Compressional wave front propagation through a simple vortex. R. B. Lindsay. **20**: 89—1948

Dispersion of compressional waves in isotropic rods of rectangular cross section. R. W. Morse. **20**: 833—1948

Electromechanical feedback. Jan de Boer and Gerrit Schenkel. **20**: 641—1948

Erratum: The propagation of an acoustic wave along a boundary. Isadore Rudnick. **20**: 149—1948

Interactions between a plate and a sound field. R. D. Fay. **20**: 620—1948

Lumping of distributed mass. G. E. Hudson and R. D. Specht. **20**: 648—1948

Reflection and transmission of sound by a spherical shell. Joseph B. Keller and Herbert B. Keller. **20**: 310—1948

Reflection of sound from submerged plates. W. J. Finney. **20**: 626—1948

Theoretical analysis of the mercury delay line. H. J. McSkimin. **20**: 418—1948

Thickness-shear vibrations of thin anisotropic plates. Gunnar Hok. **20**: 406—1948

ABSTRACTS

Impulse response of monotonic dispersive systems. M. J. DiToro. **20**: 582—1948

Large amplitude motions of a string. H. Harrison. **20**: 598—1948

Method for determining complex compressional modulus of sheet structures. Peter J. Westervelt. **20**: 587—1948

Propagation of sound in gases as a transport phenomenon. Harold M. Mott-Smith. **20**: 599—1948

Reciprocity calibration of primary vibration standards. Sanford P. Thompson. **20**: 596—1948

Theoretical analysis of the mercury delay line. H. J. McSkimin. **20**: 582—1948

SUBTITLES

Elementary mechanical vibrations. Austin H. Church. **20**: 555—1948

Plane and circular motion of a string. Henry Harrison. **20**: 874—1948 L.E.

Vibrations of a sphere and of the human head in a free sound field. **20**: 753—1948

13. Underwater Sound

13.1 General, Unclassified

PAPER

Sheet of air bubbles as an acoustic screen for underwater noise. Donald P. Loye and Wm. Fred Arndt. **20**: 143—1948

ABSTRACTS

Acoustic screen for making underwater noise reduction tests in Pearl Harbor. Donald P. Loye. **20**: 224—1948

Acoustical Laboratory facilities at the U. S. Naval Engineering Experiment Station. George Wohlberg. **20**: 588—1948

U. S. Navy Underwater Sound Reference Laboratory, Orlando, Florida. Bruce V. English. **20**: 223—1948

13.2 Propagation of Sound in Water. Attenuation. Fluctuation

PAPERS

Absorption of sound in suspensions of irregular particles. R. J. Urick. **20**: 283—1948

Example of propagation of underwater sound by bottom reflection. Robert W. Young. **20**: 455—1948

Origin of sound absorption in water and in sea water. L. N. Liebermann. **20**: 868—1948

Sheet of air bubbles as an acoustic screen for underwater noise. Donald P. Loye and Wm. Fred Arndt. **20**: 143—1948

ABSTRACTS

Acoustic screen for making underwater noise reduction tests in Pearl Harbor. Donald P. Loye. **20**: 224—1948

Absorption of sound in fresh water and in the sea. Leonard N. Liebermann. **20**: 223—1948

Attenuation of ultrasonic sound waves in water. R. W. Leonard. **20**: 224—1948

Examples of propagation of underwater sound by bottom reflection. Robert W. Young. **20**: 224—1948

Theoretical and observed absorption of sound in suspensions. **20**: 225—1948

13.4 Reflection. Echoes. Structures for Absorbing Sound in Water

PAPERS

Absorbing media for underwater sound measuring tanks

and baffles. W. P. Mason and F. H. Hibbard. **20**: 476—1948
Interactions between a plate and a sound field. R. D. Fay. **20**: 620—1948
Reflection of sound from coastal sea bottoms. L. N. Liebermann. **20**: 305—1948
Reflection of sound from submerged plates. W. J. Finney. **20**: 626—1948
Reflection of underwater sound from the sea surface. L. N. Liebermann. **20**: 498—1948

ABSTRACTS
Experimental investigation of non-specular reflection of sound from submerged steel plates. W. J. Finney. **20**: 582—1948
Interaction between a plate and a sound field in a fluid medium. R. D. Fay. **20**: 582—1948
Reduction of reverberation in a water-filled steel test vessel by use of a porous material. Bruce V. English and Charles L. Darner. **20**: 587—1948

13.6 Scattering. Reverberation in Water

PAPERS
Reverberation in the sea. Carl F. Eyring, Ralph J. Christensen, and Russell W. Raitt. **20**: 462—1948
Scattering of ultrasonic waves in water by cylindrical obstacles. Louis Bauer, Paul Tamarkin, and R. B. Lindsay. **20**: 858—1948

ABSTRACTS
Experimental investigation of non-specular reflection of sound from submerged steel plates. W. J. Finney. **20**: 582—1948
Interaction between a plate and a sound field in a fluid medium. R. D. Fay. **20**: 582—1948
Scattering of ultrasonic waves in water by solid cylinders. Louis Bauer, Paul Tamarkin, and R. B. Lindsay. **20**: 583—1948

SUBTITLES
Bottom reverberation. **20**: 472—1948
Deep scattering layers. **20**: 467—1948
Surface reverberation. **20**: 471—1948

13.7 Radiation from Objects Vibrating under Water. Acoustical Impedance. Mechanical Impedance

PAPERS
Interactions between a plate and a sound field. R. D. Fay. **20**: 620—1948
Radiation from a diaphragm struck periodically by a light mass. Murray Strasberg. **20**: 683—1948
Reflection of sound from submerged plates. W. J. Finney. **20**: 626—1948

ABSTRACTS
Ultrasonic radiation from constrained piston sources and rings. A. O. Williams, Jr., G. S. Heller, and R. L. Hellens. **20**: 583—1948
Ultrasonic radiation from curved quartz crystals. Louis Fein. **20**: 583—1948
Underwater directional characteristics of a free-edge plate. A. T. Jaques, E. Tuck, and R. VanZant. **20**: 582—1948

13.9 Noise in Water, Ship Noise. Biological Noises

PAPERS
Acoustical characteristics of noise produced by snapping shrimp. F. Alton Everest, Robert W. Young, and Martin W. Johnson. **20**: 137—1948
Sheet of air bubbles as an acoustic screen for underwater noise. **20**: 143—1948

ABSTRACTS
Acoustic screen for making underwater noise reduction tests in Pearl Harbor. Donald P. Loye. **20**: 224—1948
Underwater sounds of biological origin. Arnold M. Small **20**: 225—1948

13.10 Sounds of Finite Amplitude in Water. Explosions. Distortion. Cavitation.

PAPERS
Secondary pressure pulses due to gas globe oscillation in underwater explosions. I. Experimental data. A. B. Arons, J. P. Slifko, and A. Carter. **20**: 271—1948
Secondary pressure pulses due to gas globe oscillation in underwater explosions. II. Selection of adiabatic parameters in the theory of oscillation. A. B. Arons. **20**: 277—2948

ABSTRACTS
Apparatus for cavitation studies. F. G. Blake, Jr. **20**: 223—1948
Effects of high intensity ultrasonic radiation. J. F. Muller and G. W. Willard. **20**: 589—1948
Onset of acoustical cavitation in fluids. F. G. Blake, Jr. **20**: 590—1948

13.11 Instruments Relating to Underwater Sound. General

PAPER
Absorbing media for underwater sound measuring tanks and baffles. **20**: 476—1948

PATENT
Distance measuring system. Walter J. Brown and John E. Shomer. **20**: 83—1948

13.11n Navigational Instruments Using Underwater Sound. Underwater Listening and Echo Ranging Devices. Sonar

PATENTS
Acoustic range finer. Wilden A. Munson and John C. Steinberg. **20**: 578—1948
Apparatus for echo distance measurement. Edwin E. Turner, Jr. **20**: 363, 364—1948
Apparatus for submarine signaling. Edward W. Smith. **20**: 579—1948
Balanced driver for sonic depth finders. Harvey C. Hayes. **20**: 725—1948
Cathode-ray indicating device. Warren P. Mason. **20**: 364—1948
Direction determining system. Edwin E. Turner. **20**: 218—1948
Distance and direction measuring system. Edwin E. Turner, Jr. **20**: 577—1948
Electrical apparatus. Laurence Batchelder. **20**: 218—1948

Electrical circuits. Bertram M. Harrison. **20**: 363—1948
Hydrophone selecting system. John B. Retallack. **20**: 364, 726—1948
Object locating system. James B. Hays, Jr. **20**: 362—1948
Observation system. Hugo Benioff. **20**: 362—1948
Plotter indicator for harbor defense. Earl W. Springer. **20**: 218—1948
Projecting and retracting mechanism for underwater signal sources. Charles C. Barber. **20**: 218—1948
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13.11t Transducers for Underwater Sound. Transducer Calibration

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ABSTRACTS

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